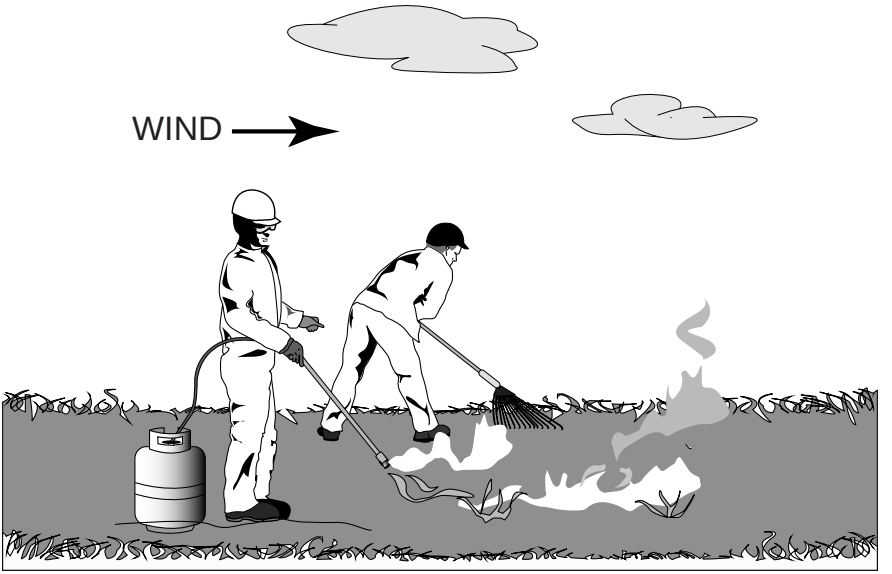

Fire is a component of the tundra ecosystem, primarily for moist tundra. Burned tundra vegetation can regenerate, and as long as the roots and perenniating buds are left intact, recovery can be relatively rapid — 5 to 10 years. Sedges and grasses recover more quickly than mosses and lichens, which ordinarily must recolonize, while many vascular plants survive the fire.

This tactic is used to remove petroleum residue or other hazardous residues from a site following gross removal of the substance with other tactics. This tactic is not intended to remove pooled product from the ground surface. Heat generated while burning a pooled substance may cause vertical migration of the substance into the root mat or tundra soils, and could induce thermokarst.

One worker rakes contaminated vegetation with a metal rake so that grass and stems are oriented more or less vertically. A second worker uses a weed burner, which consists of a flame nozzle, hosing, and a propane tank. The flame nozzle is held just above the contaminated vegetation until the vegetation is burned down to stubble. Care should be taken not to burn vegetation down to ground level, which may damage the root system. Work is started on the upwind edge of the spill area and proceeds downwind so workers are not exposed to smoke. Fans may be used to increase burning efficiency, but should be considered only when the fire is controlled and will not spread to unaffected areas. Burn residue can be recovered with hand tools.

APPLICABILITY

	APPLICABILITY	COMMENTS
SPILLED SUBSTANCE	Crude oil, fuels, glycol, methanol, Therminol	• Not effective for vegetation contaminated with drilling muds, produced water, or seawater. • If vegetation contaminated with weathered oil or fuel is burned, it may produce a residue that is difficult to clean up.
TUNDRA TYPE	All	• The drier the site, the more carefully the burn should be monitored to avoid damage to the root mat. Not recommended for dry tundra unless the root mat is wet or damp from rain or first flooded with water (Tactic T-1). Wet vegetation will still burn under the direct flame of a weed burner.
SEASON	All	• The least potential for damage to tundra root mat is during frozen conditions or when root mat is saturated with water.

CONSIDERATIONS AND LIMITATIONS

- Ensure spilled substance is flammable.
- Burn as soon as possible after a spill (before evaporation of volatile components of spilled substance).
- Follow proper safety procedures and use personal protective equipment, as required.
- Permission must be obtained from the Alaska Department of Environmental Conservation and potentially from the U.S. Environmental Protection Agency before burning tundra vegetation.
- This tactic has been adapted from Tactics B-2 and SH-10 in the *Alaska Clean Seas Technical Manual* (Alaska Clean Seas, 1999, Vol. 1) and has been tested on crude-oil-affected dry, moist, and wet tundra on the North Slope with acceptable short- and long-term results (McKendrick, 1978; Johnson and Viereck, 1983). Little test data exist which document whether the use of this tactic on *other spill types* results in long-term benefits to tundra restoration compared with other tactics, combinations of tactics, or "no action."

EQUIPMENT, MATERIALS, AND PERSONNEL

- Weed burner with propane tank (1 operator) – to ignite vegetation
- Metal rake (1 operator) – to orient oily vegetation
- Fire extinguisher (1 operator) – to suppress unwanted fire
- Fans (optional) – to increase burning efficiency